SCIENCE

FRIDAY, OCTOBER 21, 1887.

THE ENDEAVORS of the Australian colonies to raise money for resuming explorations in the Antarctic regions have so far been unsuccessful. The funds for rewards for whalers extending their cruises beyond the sixtieth degree of latitude have not been appropriated, and, since Allen Young's offer to take command of an expedition of this kind, nothing has been done. Sir Graham Berry has, in accordance with instructions from the government of Victoria, asked the British Government if they would contribute the sum of £5,000 towards an Antarctic expedition, provided the Australian colonies agreed to contribute a similar sum, and the subject is now under consideration by the British Government. The financial state of the Australian colonies is not very satisfactory at the present time, and therefore it is not likely that an energetic attempt will be made. The movement for resuming these explorations originated in Germany; but so far nothing has been done there to raise money and to send out an expedition, as the activity of explorers is almost exclusively directed towards Africa and the islands of the Pacific Ocean. Our American whalers are those who have the most immediate interest in the matter, as they frequent the neighboring seas and derive considerable quantities of whale-oil from that region. A few years ago one of them landed on m Graha Land, and found near its shores an abundance of sea-animals; but as he had no authority to visit those dangerous latitudes, and as the ice was closing upon his ship, he did not continue his explorations. We do not think that the endeavors of the Australian colonies will be successful for some time to come, and it would be gratifying if meanwhile American enterprise would take up this important problem, in which no nation is more interested than we are, as our vessels are those which visit the Antarctic waters most frequently, and as a successful approach is most probable close to the south point of our continent. Arctic navigation shows that progress is always most promising under the shelter of land. Graham Land can be reached comparatively easy; and under its shelter, that is, on its eastern coast, important discoveries without great risk, and at no great expense, can be made. This would be a task for one of our whaling-masters who, in their swift schooners, navigate year after year the ice-covered waters of the Arctic Ocean.

IN A RECENT SERIES of articles, the London *Chemical News* has sought to show the importance of scientific research to nations, and in the closing article of the series encounters what is the main question with Englishmen, whether the present position of science in the United Kingdom is satisfactory, and, if not, why not. Answering its own queries, *The Chemical News* says, "To the former of these queries scarcely any one has the boldness to reply in the affirmative. Were all well with us in this respect, why that feeling of dissatisfied excitement rarely felt on any subject which does not fall within the programme of faction? Why do we send out commissions to scrutinize the state of scientific and technical education in continental countries? Why do we institute new colleges and training-schools of different grades, and why propose, as it has been lately done, new parliamentary action in this direction? Why do we hear complaints made, not merely at the gatherings of purely scientific bodies, but among men of business, that in this important respect, and in comparison with rival nations, we are not holding our own, not to speak of gaining ground? That along with this feeling of discontent and this craving for improvement there is an undercurrent of indifference, or even of hostility to science, is but too true. Why, else, should Sir Henry Roscoe, in his late presidential address before the British Association, remark that science was less respected in Britain than in other civilized countries? Or how could a well-informed German contemporary take occasion to say that Britain had, whichever party happened to be in power, 'a government very unfavorably disposed to science and to her disciples' (*Eine der Wissenschaft und ihren Jüngern sehr abhold gesinnte Regierung*)? In fact, notwithstanding all that has been done of late years, all the efforts made, and all the money expended, many of the complaints urged in Babbage's 'Decline of Science' still hold good. It can no longer, indeed, be said that there is in all the universities of Britain not a single person engaged in any train of original research. We recognize with pleasure that experimental science has obtained a footing in our ancient seats of learning, and that fairly efficient laboratories — chemical, physiological, and biological — have been or are being organized. Whether these institutions, when compared with those met with abroad, e.g., at the University of Strasburg, are fairly commensurate with the importance of their task and with the wealth of the country, is another question. But we have still to complain of the paucity of research issuing from the British universities. We have tilled and manured the soil, and scattered the good seed; but the harvest, so far, is of the scantiest."

THE 'UMBRIA'S' WAVE.

MR. HENRY TOYNBEE, marine superintendent of the English Meteorological Office, has published in *Nature* of Sept. 29 a report by William Watson of the 'Umbria's' wave. Captain Watson, who is general superintendent of the Cunard line of steamers, states that no doubt there were some big waves knocking about the Atlantic on the morning of July 26, but nothing more than could, under the conditions of weather, be expected. There is no evidence of other steamers meeting an exceptionally big wave.

Abstract of Log, SS. 'Umbria.'

Date.	Wind.	Bar.	Air.	Water.	Remarks.
July 25.					
Noon	S.W.	29·60	62°	63°	Strong wind and overcast.
4 P.M.	W.S.W.	29·50	60°	61°	Fresh wind and showery.
8 P.M.	W. by N.	29·45	60°	61°	Fresh wind and clear.
Midnight	W. by N.	29·31	60°	62°	Moderate gale, force 9.
26th.					
4 A.M.	N. W. by W.	29·42	59°	61°	Moderate gale and squally, force 9.
8 A.M.	N. W. by W.	29·50	60°	62°	
Noon	N. W. by W.	29·70	59°	62°	

"4.40 A.M., sea came on board over the bows, breaking No. 2 companion-hatch, twisting the forward bridge, breaking some iron stanchions on the bridge, breaking the short bridge between the forward end of the promenade deck and the break of the forecastle, and bending the brass rails on the port side of the main upper bridge, leaving the lower bridge intact. 8 A.M., fresh gale, force 9, with a heavy, confused sea. Noon, gale moderating and the sea going down, but still confused."

At midnight on the 25th the wind was freshening from west by north, and the weather becoming squally. A long, heavy sea was coming from west-south-west, but the ship was only taking an occasional spray over all. At 2 A.M., 26th, the wind was west-north-west, a gale, with heavy and frequent squalls, sea rising fast from north-west. At 4, the wind had veered to north-west, with heavy and frequent squalls. At this time the west-south-west sea was still very heavy, with a high north-west sea running across and over

it, making a very high and confused sea; but the ship was making 16 knots, and, though the spray was flying fore and aft, she had not up to this time taken a drop of solid water on board.

At 4.40 A.M., latitude 50° 50′ north, longitude 27° 8′ west, the officer of the watch noticed a heavy-breaking sea coming from the north-west: he ordered the officer at the engine-telegraphs to reduce to 'half speed,' but, before this could be done, the top of this sea came on board, but did no damage. The ship rose quickly to it; but, as this wave passed under the stern, she plunged heavily, and, dipping her bows into the second wave, — not breaking, or, as the officer of the watch expresses it, 'dead water,' — scooped up a mass of water, which, running aft over the break of the forecastle, fell upon No. 2 companion-hatch, breaking it to pieces, also breaking the short bridge between the fore-end of the promenade deck and the break of the forecastle. The look-out bridge between the lighthouses was twisted, and five iron stanchions and 20 feet of the iron rails on it broken, and four brass stanchions on the port side of the upper main bridge were bent. The middle part of the top-gallant forecastle deck for 40 feet in a fore-and-aft line was sent down two inches by the weight of the water passing over it. Some water got down No. 2 hatchway and frightened a few passengers.

The second officer is certain that the first sea did no damage, as only the top of it broke over the ship; but he describes the plunge the ship took, as this wave passed astern, as very heavy, and that she went bows into the solid water of the second wave, which he is quite certain was not breaking, but 'coming smoothly along.' This made the ship "stagger, and the sensation was as if she had struck something hard." After the sea came on board, the speed was reduced to 10 knots, and was not increased till noon.

The canvas screen on the port side of the upper main bridge was spread, and the spray striking this bent the brass stanchions. The lower bridge escaped, through there being no canvas screen spread.

Although the wind was three points on the starboard bow, with a heavy sea from the same direction, it seems, from the brass stanchions on the upper main bridge having been bent aft and to starboard, and from certain marks on the forecastle deck, that the second officer's statement, as to the damage being done by the second wave (probably due to the west-south-west sea, which was still running high and fast), is correct; and on more than one occasion, serious damage has been done by a sea coming up on the lee bow and breaking on board hours after the wind had been blowing three or four points on the other bow.

If we take into consideration a long and heavy sea from west-south-west, a north-west gale, and heavy sea from the same quarter, we shall have an ugly, confused sea. If a very powerful ship with very fine lines is driven at the rate of 16 knots through this confused sea, there is not the least occasion to call in the aid of tidal or earthquake waves to account for any damage the ship would receive.

In the engine-room there was no shock felt, and the sailors and firemen say they did not notice any thing unusual, save only some passengers making a noise.

The masthead light was extinguished through the chimney being unshipped and falling across the wick.

THE SHORTHAND CONGRESS.

THE first international shorthand congress ever held was inaugurated in London, Monday evening, Sept. 26, under the presidency of the Earl of Rosebery. We condense the report of the proceedings from an article in *The Athenæum* of Oct. 1. Though held in commemoration of events in the history of English shorthand, its interest is by no means confined to the English-speaking race, and several leading representatives of continental systems were present; while others, though not able to attend in person, sent papers on the theory and practice of the art as used in their respective countries. It is, indeed, acknowledged by common consent that England was the mother-country of modern shorthand, and that the tercentenary of English shorthand is the tercentenary of the shorthand of the world. Very little value can be assigned to the invention of Dr. Timothy Bright, which is nominally the event commemorated. It seems to be far inferior in every respect to the Tironian notes of the time of Cicero; but it is the earliest English work on shorthand known to bibliographers, and it was followed, at an interval of only some fifteen years, by a series of publications (beginning with that of John Willis, 1602) based in the main on the same principles as are now generally employed.

France began with adaptations of the well-known English system of Taylor, but the more recent French systems follow generally a plan peculiarly their own. Their alphabet of consonants contains letters of two different lengths, but of one thickness, and their vowels consist of loops and hooks which are written in with the consonants, the finer distinctions of vowel-sound being indicated, when necessary, by detached accents. These accents are seldom or never used in fast writing: the French reporting style may therefore be described as employing a few very simple vowel-signs written in with the consonants.

The German systems are still more characteristic, being what are called 'script' systems; that is, systems which employ, instead of straight lines and circular arcs, characters requiring the same movements of the hand as the letters of common writing. The vowels are very fully expressed, sometimes by characters of their own (which are usually either upstrokes or horizontal strokes), but more frequently by modifications of the form or thickness of the consonants. It will be easily understood that these forms, not being geometrical, lend themselves with special readiness to varieties of modification, just as the Gothic style of architecture is more adaptable than the Grecian. The indication thus given is often a mere general indication of the presence of a vowel without showing what the vowel is.

The founder of the German method was Gabelsberger, whose first publication is dated 1834, and his system is still the most widely used of all. Its most prominent representatives at the congress were Dr. Zeibig, professor of the Royal Stenographic Institute, Dresden, well known for his historical publications; and the Rev. J. Alteneder, domvicar of Passau, in Bavaria. It is used for reporting the debates in the Houses of Parliament of Austro-Hungary, Saxony, and Scandinavia. Next in order, both of time and of present popularity, comes the system of Stolze, first published in 1841, but since largely modified. It is used in reporting the proceedings of the Imperial Parliament at Berlin, and was ably represented at the congress by some of its leading professors and practitioners, notably by Dr. Max Bäckler, parliamentary shorthand-writer, Berlin. Two other systems, those of Arends and Roller, have also an established position, but were not, so far as we are aware, represented at the congress. The total number of shorthand societies using these four systems is given as about 1,000, and the number of adherents about 25,000.

The French systems were represented by four parliamentary reporters from Paris; and the chief stenographer, M. Guenin, though not able to attend in person, sent a paper which was read in the congress.

In America the systems mostly used are modifications of Isaac Pitman's, one of them bearing the name of his brother Benn Pitman, while two others, which aim at a higher degree of abbreviation, are known as Graham's and Munson's. Graham's was represented by Prof. W. D. Bridge of Chautauqua University, who is an expert writer, and well informed upon the state of shorthand in America. He was, so far as we know, the only member who crossed the Atlantic to attend the congress.

The first day of papers and discussions brought out several points of interest. A well-devised list of questions on parliamentary reporting had been sent to foreign countries as well as to English colonies; and the replies, which were both numerous and full, had been ably condensed into a *précis* by Mr. Gurney-Salter, the shorthand-writer to the Houses of Parliament. A lively debate ensued, in which some of the leading men from the gallery (notably Mr. Storr of the *Times*) took part, as well as some of the foreign representatives, Dr. Max Bäckler especially distinguishing himself by his ready command of the English language. The inadequacy of the accommodation provided for reporters in the Houses of Parliament, especially as regards difficulty of hearing, was made painfully prominent, while in other countries they are for the most part placed in the body of the house, in the best situations possible.

It is the practice in the French Senate to employ always two official shorthand-writers at the same time to check one another,

and the same practice prevails at Berlin and elsewhere. There was some discussion as to the advantages of this practice. The chief advantage claimed for it by Dr. Bäckler was that it afforded better facilities for hearing, as some orators speak from the tribune, and others from their seats. One of the two writers remains in his official place in front of the tribune, and the other places himself near the speaker for the time being. In America a complete verbatim report of all debates is printed at the public expense. It is even more complete than the debates themselves, as it frequently contains speeches which are not actually delivered, but only taken as delivered (if we may use the expression), owing to lack of time.

The congress, if it serves no other purpose, will at least serve to show the general public of England that there are other systems doing good work in the world besides the one with which they are best acquainted. Mr. Gurney-Salter read a paper giving valuable information as to the official and non-official reporting performed by the staff who work under his direction. Each 'shorthand-writer' has his own 'shorthand clerk,' to whom his notes are carried every half-hour, and who reads them aloud to two longhand clerks at once, the shorthand-writer all the time never leaving his place, but writing on continuously for two, three, or more hours. When his 'turn' of writing is over, he begins to revise the longhand transcript, which is read over to him while he follows it in his own notes. This is the process pursued in taking the evidence at parliamentary committees, and about 2,800 words of manuscript are produced per hour. All the 'shorthand-writers' but one use the Gurney system, and this one is a phonographer.

Mr. Gurney-Salter also gave some interesting information as to changes which have gradually been introduced in the mode of writing certain words. Comparing the present mode of writing with that in use at the beginning of this century, he described the changes as including a briefer writing of certain words, but as consisting chiefly in two things; namely, the writing of every word separately, and a fuller insertion of vowels — not initial vowels, for they were always inserted, but vowels in the middle of words. These medial vowels are inserted by lifting the pen and writing the remainder of the word in position.

AFGHAN LIFE IN AFGHAN SONGS.

IN *The Contemporary Review* for October, 1887, is an article by James Darmesteter on Afghan life in Afghan songs. Mr. Darmesteter has much to say on the political relations of Afghan to the British Empire of India, but introduces his article with some account of the native folk-songs. On the night of the 7th of April, 1886 (Wednesday, 11 P.M.), as he was sitting in the garden of his bungalow at Peshawer, gazing at the stars and the silver moon, etc., Mr. Darmesteter heard his Afghan *chaukidar* (life and property not being very safe at Peshawer, it is usual to keep an armed watchman, called *chaukidar*), old Piro, of the Khalil tribe, muttering in a broken voice fragments of a song that sounded like a love-song. He asked him to repeat the song to him. This he modestly declined to do for a long time, but at last he gave way, and began, —

> "My love is gone to Dekhan, and has left me alone;
> I have gone to him to entreat him.
> 'What is it to me that thou shouldst become a Raja at Azrabad?'[1]
> I seized him by the skirt of his garment and said, 'Look at me!'"

Here old Piro stopped, and neither for love nor for money could he prevail upon him to go on: his *repertoire* was exhausted. But Mr. Darmesteter's interest had been awakened, and from that night he resolved to collect what he could of the Afghan popular poetry. The field was new and unexplored. English people in India care little for Indian songs.

He had gone to the border to study the Afghan language and literature, but had soon to recognize that the so-called Afghan literature is hardly worth the trouble of a journey from Paris to Peshawer. It consists mainly of imitations and translations from the Persian, Arabic, and Hindustani. For a time, under the Moguls, an original and free spirit permeated those imitations, and Mirza Ansari, the mystical poet, or Khushhal Khan, prince of the Khatak tribe, would be accounted a true poet in any nation and any literature. But these are rare exceptions, and the theological lucubrations of the much-revered Akhun Darveza, that narrow, foul-mouthed, rancorous, and truly pious exponent of Afghan orthodoxy, the endless *rifacimenti* of Hatim Tai, the most liberal of Arabs, of Ali Hamza and the companions of the Prophet, or the ever-retold edifying story of Joseph and Zuleikha, — all seem as if they had been written or copied by mediæval monks or unimaginative children.

[1] Hyderabad, a favorite place of resort for Afghan adventurers and *soldats de fortune*.

The popular, unwritten poetry, though despised and ignored by the reading-classes, is of quite a different character. It is the work of illiterate poets: but it represents *their* feelings; it has life in it, — the life of the people; it is simple, because the natural range of ideas of an Afghan is simple and limited; it is true to nature, because it represents those ideas without any moral bias or literary after-thought. Sometimes, therefore, it is powerful and beautiful, because it renders simply and truly powerful passions or beautiful feelings.

During a few months' stay on the border, Mr. Darmesteter collected about one hundred and twenty songs (to be published, with text, translation, and commentary, in the *Bibliothèque Orientale* of the French Asiatic Society) of every description, — love-songs, folk-lore, hymns, romantic songs, and political ballads. If we want to know what an Afghan is, let us put all books aside and receive his own unconscious confession from the lips of his favorite poets. The confession, it is to be feared, would not be much to their honor on the whole, but it will be the more sincere. This is the value of the wild, unpremeditated accents of these people: a poor thing it is, but it expresses their nature.

The Afghans (*Afghan* is their Persian name; their Indian name is *Pathan;* their national name, *Pukhtun* or *Pushtun*) are divided into three independent groups: —

1. The Afghans under British rule, or what we may call the Queen's Afghans, who inhabit the border districts along the Indus, Dera Ismail Khan, Bannu, Kohat, Peshawer, and Hazara. They were conquered in 1849, with the Sikhs, their then masters.

2. The Afghans of Afghanistan proper, or the Emir's Afghans, — the only part of the race that forms something like an organized power.

3. The Afghans of Yaghistan, "the rebel or independent country," that is to say, those Afghans who do not belong either to the British Raj or to the Emir, but live in the native national anarchy in the western basin of the upper Indus, — Svat, Buner, Panjkora, Dher, etc. The Afghan of Yaghistan is the true, unsophisticated Afghan.

The songs were collected in the British districts of Peshawer and Hazara, but most of them express, nevertheless, the general views of the Afghans to whatever part they belong: for though there is no real nationality amongst the Afghans, yet there is a strongly marked national character; and though nothing is more offensive to an Afghan than another Afghan, still there is nothing so much like an Afghan as another. Moreover, many of these songs come from Yaghistan, or Afghanistan. Songs travel quickly. The thousands of *Powindas* that every year pass twice across the Suleiman range, bringing the wealth of Central Asia and carrying back the wealth of India, bring also and carry back all the treasures of the Afghan Muse on both sides the mountain; and a new song freshly flown at Naushehra, from the lips of Mohammed the Oil-Presser, will very soon be heard upon the mountains of Buner, or down the valley of the Helmend.

There are two sorts of poets, — the *Sha-ir* and the *Dum*. With the *Sha-ir* we have nothing to do: he is the literary poet, who can read, who knows Hafiz and Saadi, who writes Afghan Ghazals on the Persian model, who has composed a Divan. Every educated man is a *Sha-ir*, though, if he be a man of good taste, he will not assume the title. Writing Ghazal was one of the accomplishments of the old Afghan chiefs. Hafiz Rahmat, the great Rohilla captain, and Ahmed Shah, the founder of the Durani empire, had written Divans, were 'Divan people,' — *Ahli Divan*, as the expression runs. The *Sha-ir* may be a clever writer, he may be a fine writer; but he has nothing to teach us about his people. We may safely dismiss him with honor and due respect.

The *Dum* is the popular singer and poet, for he combines the two qualities, like our *Jongleur* of the middle ages. The *Dums* form a caste: the profession is hereditary. The *Dum* is despised

by the people with literary pretensions, who fly into a passion when one of these ignorant fellows, flushed with success, dubs himself a *Sha-ir*. He is not a Pathan by race, though he has been *pathanized:* he is a low sort of creature, whom the Khans and Sardars treat as the mediæval barons might have treated the itinerant *Jongleur*, — despised, insulted, honored, liberally paid, intensely popular amongst the people.

The novice *Dum* goes to a celebrated *Dum*, who is a master, an *Ustad:* he becomes his disciple, his *shagird*. The master teaches him first his own songs, then the songs of the great *Dums* of the present and past generations. The *Ustad* takes his *shagirds* with him to the festivities to which he has been asked, private or public, profane or religious: he takes them to the *hujra*, the 'common house' or town-hall of the village, where idlers and travelling guests meet every night to hear the news that is going round, and listen to any man that has a tale to tell or a song to sing. The *Ustad* pockets half the sum given by the host, and the other half is divided between the *shagirds*. When a *shagird* feels he can compose for himself and is able to achieve a reputation, he leaves his master and becomes himself an *Ustad*. I am sorry to say that *Dums* generally are not over-sensitive about literary honesty: plagiarism is rife among them. A *Dum* will readily sing, as his own, songs of the dead or the living. It is the custom that poets should insert their names in the last line: you have only to substitute your own name for the name of the real author or of the former plagiarist. People will not applaud you the less, though of course the injured party may retort with a satire or a stab. A good *Dum* may die a rich man. Mira would hardly open his mouth anywhere under fifty rupees. He was an illiterate man: he could not read, but he knew by heart a wonderful number of songs, and could improvise. You would ask him for a song in a certain shade of feeling; then he would go out with his men, and an hour afterwards they would come back and sing a beautiful chorus on the rebab. His song of 'Zakhmé' is sung wherever there are Afghans, as far as Rampor in Rohilkhand, and Hayderabad of Dekhan, and sets them a-dancing as soon as the first notes are struck. It was sung at the Ravul Pindi interview as the national song of the Afghans, though it is nothing more — or, rather, nothing less — than a love-song. An Irish journalist — Mr. Grattan Geary, of the *Bombay Gazette* — was struck with its melody, and had it printed. It is probably the only Afghan song that has ever been published (two songs have been translated by Mr. Thorburn in his book on Bannu, and another by Colonel Raverty in the introduction to his Afghan grammar).

The people piously inclined object to song, among the Afghans as well as elsewhere; and the Mollahs inveigh against the *Dums*. There is only one occasion when even a Mollah will approve of the song of a *Dum:* it is when the Crusade, or, as the Anglo-Indians say, the Crescentade, has been proclaimed; then is the time for the *Dum* to rehabilitate himself, as he sings the glories of the sacred war, the bliss reserved to the *Ghazi*, the roses that grow for him in the groves above, and the black-eyed houris that come from heaven and give the dying man to drink of the sherbet of martyrdom. But, in spite of the Mollahs, the *Dum* is as popular in his profane as in his semi-sacred character. Song is a passion with the Afghans; in fact, one of the few noble passions with which he is endowed. Whenever three Afghans meet together, there is a song between them. In the *hujra*, during the evening conversation, a man rises up, seizes a rebab, and sings, sings on. Perhaps he is under prosecution for a capital crime; perhaps to-morrow he will be hunted to the mountain, sent to the gallows; what matters? Every event of public or private life enters song at once, and the *Dums* are the journalists of the Afghans. Possibly the *Dum* of to-day has preserved for us faithfully enough a picture of what the Bard was with the Gauls.

ENGLISH COIN-SALES OF 1886 AND 1887.

AS the English season for coin-sales will soon begin again, *The Athenæum* gives its readers some information on the general results of those which have taken place during the last ten months. The coin-selling year may be said to commence in November, and to end in July: sometimes it is extended into August, but, if so, it never oversteps the first week of that month. Even between November and August there are certain periods which have to be avoided, especially immediately before and after Christmas and Easter. The reason for these precautions arises from the circumstance that collectors of coins are comparatively few, and some of the largest buyers live out of London: consequently those who have collections to dispose of must be careful to offer their wares for sale when these rare birds are most likely to be in town. Sales of pictures and china will generally secure a good attendance, but not so is it with coins: so these precautions must be taken.

Coin-sales may be divided into two classes, — ancient and modern; the former dealing chiefly with the coinages of Greece and Rome, the latter with those of nations of modern times. It will be found, on looking through the sale-catalogues of the last season in England, that those of modern coins predominate. Of ancient coins there have been only three collections sold: viz., a portion of the stock of the late William Webster, the well-known dealer, Dec. 22; a collection of "a gentleman relinquishing the pursuit," June 14 and 15; and a cabinet of select Greek coins, June 27 to July 1. On the modern side there have been three sales of four to six days each, in December, May, and August: others of the war medals, etc., of Capt. E. Hyde Greg; the coins of the late Joseph Mayer of Liverpool; of the late Archdeacon Pownall, vice-president of the Numismatic Society; and of Major W. Stewart Thorburn. There has been one very important sale in Paris of Roman and Byzantine gold coins, belonging to the Vicomte Ponton d'Amecourt; but, as we are concerned chiefly with what has taken place in England, we shall not enter into any particulars of that sale, beyond remarking that the prices yielded on that occasion far surpassed those of any previous sale of this class of coins. We mention it as it attracted many English buyers.

A general glance at the above-mentioned catalogues will show that there is, and has been for some few years, a considerable falling-off in the prices of ancient coins, while a more than corresponding increase has taken place in the sums realized by modern coins and medals. Rare and fine Greek and Roman coins will always command a market, but these pieces are exceptional; and a general good average depends principally on the more ordinary pieces in silver and on the copper coins. The sale of a "cabinet of select Greek coins" in June and July, when the catalogue was issued, bid fair to witness some big prices; but unfortunately, when the coins came to be examined, by far the greater portion, at least of the rarities, were pronounced to be forgeries, and the consequence was that those collectors who went to London bent on making some good purchases for their cabinets returned home with their purses but little lightened. It was a bitter disappointment to many; but it has served as a warning, to those who have collections to dispose of, to be careful and see that what they offer for sale is 'above suspicion.' A coin, before it passes from the auctioneer's hands into those of the buyer, has to undergo a severe and critical examination. It is turned over and over, its merits or demerits are discussed on all sides, and, if any doubt is expressed as to its genuineness, rumor soon spreads the doubt, and it is generally doomed. In the sale referred to, among the false coins there were many genuine pieces, and some of considerable rarity; but their character was damaged by their false brethren, and they paid the penalty of being in such bad company. The other sales show a fair average of prices for the finer pieces, but a very low one for the more common ones, especially those in copper. As an illustration we may give a few examples. Syracusan decadrachms, or 'medallions' as they are more commonly called on account of their size, realized from £19 to £20 10s.; a tetradrachm of Naxos, with seated figure of Silenus on the reverse, £7 10s.; similar coins of Aenus, £10; of Akanthus, £7 7s.; of Ariarathes IX., king of Cappadocia, £18; an electrum stater of Cyzicus, £13; a tetradrachm of Antiochus VI. of Syria, £12, etc. These pieces are all somewhat rare; but, when we examine the lots containing the smaller silver coins and those of copper, we find as many as twenty or more going for only a few shillings. These results are very disappointing, especially to those who formed collections some years ago, and consider them in the light of invested capital.

Let us now turn to the modern side, and see what is taking place with English coins and medals. Other European coins, for the

most part, must be placed outside our consideration. They never had a market in England. The fact is, these coins are much too numerous for any private individual to make any thing like a representative series of each class, and their acquisition must be left to national collections, where one naturally expects to find every coinage well represented. The result of our observations on the English side of numismatics will be found to be just the reverse of those on ancient coins, and in all cases prices have considerably advanced. Taking the sales of the last twelve months or so, we will note the prices of a few pieces, none of which can be said to be of very great rarity. Pennies of William the Conqueror, when fine, sold from £2 to £2 10s. each; a light groat of Henry VI., £7 10s.; another of Edward V., £7 5s.; a crown of Elizabeth with *m.m.* 2, £7 5s. and £7 10s.; another of James I., with reverse inscription QVÆ DEVS CONIVNXIT NEMO SEPARET, a common type, £7 17s. 6d.; an Oxford crown of Charles I., £11 11s.; Tanner's copy of the sixpence of Cromwell, over £50; a half-broad of Cromwell, £32 15s.; a half-crown *hammered* of Charles II., £8 8s.; a proof crown of George II., £11 5s.; a pattern crown of William IV., £21 10s., etc. Such prices as these a few years ago would have been deemed almost incredible. Even the ordinary pieces, if in any thing like fine condition, of the reigns of the Georges, William IV., and Victoria, many of which are only just out of currency, and some few still current, cannot be purchased excepting at high prices; and the copper coins and tokens of the seventeenth and eighteenth centuries have risen several hundred per cent in value. A corresponding result is also shown with regard to English medals of all classes. For some years the value of English coins had been rising steadily, but it was the Shepherd sale in 1885 which gave the great impetus, and since that time it would appear as though collectors do not place any limits on their bids if they happen to come across desirable acquisitions.

How, then, can this great change be accounted for? The answer to this question is a very simple one. The old class of coin-collectors is fast diminishing, and a new one has sprung up in its place. Twenty years ago there were in England a considerable body of collectors of ancient coins, but now they can almost be counted on one's fingers; while, on the other hand, for one collector of English coins there are now ten. This falling-off in the old stock is much to be regretted; for many a man in advanced life has been induced, by the sight of Greek and Roman coins, to open those books which had remained closed since he left school or college. On these small pieces of metal we find illustrated the myths of the gods and heroes of the Greek world; we are brought face to face with the portraits of the great generals of ancient times, Alexander the Great, Lysimachus, Julius Cæsar, and Pompey, of the long line of the Ptolemies of Egypt, of the kings of Syria, Cappadocia, and Bactria, and of the still longer series of Roman and Byzantine emperors and empresses. The student of palæography, too, will glean much information from the examples of various ancient alphabets, such as the Lycian, Cyprian, Phœnician, Greek, and Latin; and to the metrologist are laid open the various systems of weights employed by the great nations of the ancient world, and through these the principal lines of trade of the Greeks and Romans. The artist, too, will find on coins the various phases of ancient art clearly defined. They show art in its origin, in its growth towards perfection and in its perfection, in its decline, and in its degradation. These are but a few of the charms offered by the study of ancient numismatics, and it is these which will be lost when coin-collecting is abandoned.

Fortunately, while the general taste for these objects in England appears to have been on the wane, those who remained constant to the study of ancient numismatics have worked with all the more ardor, and in few departments of learning has more progress been made in the last few years. But the results of these labors, till recently, have never been embodied in a compact form, and were only to be found scattered over many volumes of periodicals and journals. The Clarendon Press has, however, taken the matter in hand, and, under the guidance of Mr. B. V. Head, has issued a 'Manual of Greek Coins' ('*Historia Numorum*'), which gives in a concise form the history and description of ancient Greek numismatics (*Athen.*, No. 3098, p. 357). It also deals with their art, metrology, types, etc. The work commences with the coinages of Europe, beginning with that of Spain, and, journeying eastwards to Greece proper, crosses over into Asia, and ends with the series of Africa. This is the order adopted by Eckhel over a century ago, and, being generally accepted by numismatists, has been followed by Mr. Head. The work does not claim to be complete, for it was impossible to aim at completeness when the author was so limited in space; but nevertheless the student of Greek numismatics will find in it all that he needs at first, and when he has mastered it, if inclined, he can easily turn to the more lengthy dissertations, a list of which is given by Mr. Head in his introduction. The work is of so recent a date that the extent of its influence on the numismatic world cannot at present be gauged; but that it will bear good fruit we do not for a moment doubt, and it may even increase the list of those collectors whose falling-off we are now regretting.

We may add that what has been done by Mr. Head for Greek numismatics had recently been done by several other well-known numismatists for English coins and medals; and this may, perhaps, in some degree account for their popularity at the present time. Two new editions of Hawkins's work on the silver coinage have been issued, Mr. Kenyon has written on the gold coins, Mr. Montagu has described the copper coinage, and Hawkins's long-promised work on English coins has at last appeared.

HEALTH MATTERS.

Grinder's Consumption.

DR. CANEDY of Shelburne Falls, Mass., recently read a paper before the Franklin District Medical Society on grinder's consumption, being the results of his observations on the grinders employed by a cutlery company at that place, numbering, on an average, forty men and boys for the past twenty-five years. During the ten years just ended, twenty-three grinders have died with chronic disease of the air-passages, and three are now confined to the house with similar affections; and five in whom the disease has made considerable progress are still at work in the cutlery. Of all the occupations in which the workers are compelled to inhale an atmosphere loaded with irritating dust, as coal-mining and iron and metal polishing, none seems more certain or fatal in its effects than grinding. Investigations made at Sheffield, Eng., fix the average period which grinders can work at thirteen years. The first symptom which manifests itself is cough, soon followed by shortness of breath upon exertion, as walking up hill. During all this time an inflammatory process is going on in the lung, which results in a gangrenous or purulent condition; the patient having fever, and often a terrible cough. During this attack the patient is confined to bed from ten to twenty weeks. After six weeks an abscess forms in the lung, and, when the pus is expectorated, improvement begins. The progress of some cases is exceedingly slow; some of the patients living ten years or more, after being compelled to leave the shop by their cough, most of the time in chronic invalidism, and dying at last from the exhaustion dependent upon pulmonary disease.

In spite of all treatment, the inevitable tendency of the disease seems to be toward a fatal termination, and Dr. Canedy states that he has never seen any recoveries. The picture which is given us in this paper is a most distressing one; and it would seem that some attention should be paid to the subject by those in power. The improvements which have been made in unhealthy trades by the substitution of sanitary for unsanitary conditions have been so marked that some of them can certainly be applied to the reduction of the great suffering and mortality among the cutlery grinders. The State Board of Health can here doubtless find an opportunity to do more good work in a field in which it has so long and so well labored.

THE CHILDREN OF NEW YORK.—At a meeting of the New York County Medical Association, Dr. Charles A. Leale presented a paper on the prevention of chronic disease among the children of New York City. The facts which formed the basis of this paper were obtained by Dr. Leale and his associate physicians, from their gratuitous visits to the tenement-houses of this city during the summer of 1886. Their work extended over a period of six weeks, during which time they visited 3,659 families, representing 7,146 adults and 10,086 children. Of these, 217 adults and 3,376 children

were found sick; measles, diphtheria, scarlet-fever, scrofula, and syphilis being the prevailing diseases. In nearly every instance the sick children were not only without proper medical attendance, but were living in places rendering complete recovery to the majority almost impossible. To give the sick children the benefit of fresh air, 6,312 free tickets were distributed for the excursions of the St. John's Guild Floating Hospital, where they and their parents were given a sufficient quantity of good foods. Twenty-four very sick children were sent to a hospital on Staten Island, where they remained for a week or two. In the final report of one of these physicians, he gave it as his opinion that the great death-rate among children under five years of age was attributable to over-crowding, filth, filthy habits, and bad drainage. He says, "Upon a hot summer's day to enter a room in a rear house, whose walls were cracked and besmeared with refuse, and perhaps dead vermin, occupied by a family of six or eight, harboring three or four boarders, upon the floor of which might be seen soiled linen, particles of food, and children, with a mother standing about the red-hot stove, washing and cooking, and perhaps attending to a sick child, lying in a dark bed-room, suffering from cholera-infantum, diphtheria, or scarlet or typhoid fever, was a spectacle frequently indeed brought to my attention." Another physician observed a great number of cases of diseases of the eye and ear, especially among those subjected to bad hygienic conditions. All the houses, without exception, were overcrowded and in a filthy condition, the rear houses being dark and badly ventilated. In one apartment having three rooms, from twelve to fourteen persons were often found; in some of these, father, mother, and grown-up sons and daughters all sleeping in one room, without any regard for delicacy or decency. A third member of this visiting corps describes the small yard of a rear tenement, containing an open cesspool, around which groups of sickly children were playing; these children being stunted in growth, pale, and, as a rule, having some form of ophthalmia. Of thirty children found in one of these small yards, only one could be said to be in vigorous health.

CAUSE OF TYPHOID-FEVER. — Investigations made by Beumer, Peiper, and others seem to have demonstrated that a ptomaine produced by the typhoid-bacilli when injected into animals may cause a disease resembling typhoid-fever. This ptomaine was discovered by Brieger, and named by him 'typhotoxine.' It is this substance, and not the germ directly, which is the cause of typhoid-fever in man, according to the most recent theory. The *London Medical Record*, in commenting on these researches, draws the following conclusions from them: "1. The symptoms and alterations observed in animals in which cultures of typhoid-bacilli had been injected are due to the toxic substances secreted by these bacilli. 2. The noxious germs, which secrete the typhotoxine, are reproduced in the intestinal canal. From these the ptomaine is taken up by the circulation, and carried to all the organs liable to be affected by this poison. 3. It is most probable that the same takes place in abdominal typhoid-fever of man. 4. A first infection induces immunity against the injurious effect of a later infection, even of large quantities of the toxic substance. 5. Further experiments and careful clinical investigations are necessary in order to establish a scientific support of the theory of immunity from infections of sterilized cultures containing not more than a determined quantity of typhotoxine. 6. In case this theory be an ascertained fact, the reproduction of the same immunity in man would be justified by commencing with very minute doses of typhotoxine, which would be gradually increased according to the results obtained."

A TEST FOR THE CHOLERA-BACILLUS. — Bujwid, in the *Zeitschrift für Hygiene*, describes a chemical test for the detection of the presence of the cholera-bacillus. He adds to a bouillon-culture of the bacillus from five to ten per cent of ordinary muriatic acid. In a few minutes a rose-violet color appears, which increases in intensity for half an hour. It remains unchanged for several days. This re-action occurs in bouillon-cultures ten to twelve hours old, and in gelatine-cultures after twenty-four hours. The coloring is increased by heat. It is claimed by Bujwid that this color is characteristic of the bacillus of Asiatic cholera, and distinguishes it from all others.

BOOK-REVIEWS.

The Elements of Political Economy, with Some Applications to Questions of the Day. By J. LAURENCE LAUGHLIN. New York, Appleton. 12°.

THE author of this work is impressed, as many other people are, with the importance of a more general training in economic science. Almost all of the questions with which our national government will soon have to deal are of an economic character, or involve economic considerations; while the conflict between labor and capital shows the importance of economic science in purely industrial affairs. To supply the needed information, it will be necessary to introduce the study of economics into our high schools and academies, and for this purpose good elementary treatises are necessary. Such treatises, however, are by no means numerous; and hence a work like Professor Laughlin's is to be welcomed. It is intended as an introductory work merely, and for the use of schools: "The main topics are treated, the fundamental principles are emphasized, but no effort is made to produce a detailed and exhaustive treatise" (p. vii.). The author's object, we think, has been successfully accomplished. The adaptability of the work to school use must, of course, be tested by actual practice; but it certainly has many of the qualities that such a work ought to have. The division and arrangement of topics are excellent, and the style clear; while the choice of matter is appropriate to an elementary treatise. The work is divided into two parts, the first demonstrating the principles of the science, the second applying them to the economic problems of the day. The doctrines and method of the work are those of the standard English school. Indeed, that school seems to have been followed a little too strictly; for, though its method is the leading and most productive one, yet the comparative and historical methods have their uses.

Professor Laughlin gives the usual definitions of 'wealth' and 'value,' and the usual account of the agents of production. He lays special stress, however, on the important function in contemporary industry of the skilful industrial manager. In treating of exchange, he follows Mill in the main, while adopting something from Cairnes on the subjects of supply and demand, and foreign trade. On the subject of distribution he holds the views that have prevailed generally among English writers, with the fiction of the wages fund left out. He argues that "the proportional shares of labor and capital out of the product will depend upon the relative scarcity and abundance of labor and capital" (p. 186); while "the productiveness of a country's industries determines whether the general level of wages shall be high or low" (p. 198). Interest, or the share of the capitalist, he considers a reward for abstinence merely, while the profit of the industrial manager is treated as the wages of a superior kind of labor.

In the second or practical part of the work, Professor Laughlin seeks to apply economic principles to such questions as socialism, taxation, free trade, and others, while recognizing that such questions cannot be settled by economic considerations alone. His remarks on the subjects of money and taxation, if generally read, can hardly fail to be useful. He condemns socialism, as all economists do, and holds that the prosperity and advancement of the working-classes depend on their own mental and moral improvement. He favors individualism, and deprecates undue interference by the State, holding that "it is high time that the weak and narrow-minded recourse to the State for legislation on every conceivable subject should be abandoned for a greater growth of self-help and a more independent and self-confident manhood" (p. 349). The book may be commended not only for schools, but also for private students, and we should be glad to see it extensively read by the working-people.

Animal Life in the Sea and on the Land. By SARAH COOPER. New York, Harper. 12°.

IT is impossible to give, in large type, in the space of about three hundred double-leaded, duodecimo pages, a satisfactory account of several hundred species of animals, from the lowest to the highest. Yet this is what the author attempts in this volume; and she throws in, besides, a chapter on coral-reefs, and many pages about fossils. The result is a curious cross between a grammar-school text-book

on zoölogy and a child's picture-book of animals. The chapters are divided into short, numbered paragraphs, each headed with a full-faced subtitle, in the style of a school 'reader.' This, and the rather pedagogical style, render it nearly certain that young people will not *read* it; while the necessary sketchiness of its contents, and the innumerable omissions, render it nearly useless as a book of reference. It may have some value in the hands of a teacher as suggesting a series of topics for elaboration, but, even so, we are confident that the patient examination of half a dozen typical specimens would furnish better results than this fragmentary treatment of several hundred. It is essentially a compilation. After reading the book, one dare not swear that the author has ever seen a single one of all the animals described, unless it be some of the common sea-creatures of the Massachusetts coast. The illustrations are attractive, reasonably accurate, and many of them artistic. The mechanical part of the book is well done.

Die Psychischen Störungen des Kindesalters. Von Dr. H. EMMINGHAUS. Tübingen.

WHILE this work by an eminent German alienist is primarily designed for specialists, it contains a number of interesting observations valuable to all who are concerned in the training of children, and illustrating from an unusual point of view certain marked characteristics of child-mind. The limitation of 'childhood' strictly to the period before the establishing of the functions that connect the individual with the race is at once significant: it gives the physiological basis for much of what is distinctive in child-life, and accents the enormity of the field of thought and feeling which the approach of adolescence suddenly reveals. As mental disease is to a large extent a concomitant of civilization, and this in turn is dependent upon a general and prolonged brain-culture, it is easy to see that the child who has not yet reached the stage where character is established, where keen competition excites each brain-cell to a maximum of action, is spared a large proportion of mental disease. This fact, then, that mental diseases are far less common among children than among adults, with the further fact that the affliction of children by a large class of mental diseases not uncommon in adults is a sporadic occurrence, it is essential to bear in mind. Since the influence of a pernicious environment is responsible for only a small share of mental breakdown in childhood, it follows that heredity — 'the sins of the fathers' — is the great disposing cause. And this shows itself in the production of two classes of children: (1) those who from birth show the marks of mental deficiency or perversity, or who, without any accident or maltreatment, are sure to show such marks within a few years; (2) those who show almost no suspicious symptoms in early childhood, but in whom the strains demanded of a civilized city child cause mental breakdown. It is this last numerous class of children that is open to the wise treatment of the intelligent parent and teacher as well as of the knowing physician. Another noteworthy point is that the mental abnormality of a child can be determined only by reference to a normal child of the same age, and with an appreciation of certain traits, which, almost always pathological when occurring in adults, are within the range of normal individuality in children. The analogy between the acts of the insane and the traits of children is often drawn. This includes more than the degenerative processes of senile dementia (second childhood), and is shown, for example, in the passion for collecting all sorts of curiosities, odds and ends, and the like (common to certain forms of mania). The most striking instance of this analogy is that of the wantonness of the actions in the transition period between boyhood and youth, for which the Germans have the term *Flegeljahre*. Here there is all the recklessness of demeanor, bigness of plans, swaggering egotism, and excitable caprice characteristic of developed mania. But it is only in the presence of predisposing causes that this period leaves the region of the normal; and the frequency of runaways from home, and other cravings for a free roaming life that appear at this age, suggest that a rational outlet for this superfluous energy might be provided.

Leaving these general considerations, a few points of illustrative value should be mentioned. In an interesting chapter on suicides in children, Dr. Emminghaus accents the importance of one-sided precocity as a disposing factor. Ideas belonging to a more mature period of life are by accident, by exciting literature or other cause, planted in a yielding brain, that has not yet acquired the stability of will, or the firm distinctiveness of moral habit, that keeps such weird notions from realization in action. Nothing could better illustrate the mischievous tendency fostered by competitive examinations, to goad children on ahead of their years, with a show of great brilliancy, but a brilliancy dangerous by lack of a sound physiological basis. The triviality of the alleged cause of suicide is only a further evidence of the abnormality (usually hereditary) of such children.[1]

Idiocy and imbecility have always been the type of mental disease in children. Their ultimate relation with other forms of insanity is likewise well understood, and it has been spoken of as nature's method of cutting off the progeny of a degenerate strain. While by its nature incurable, modern study has succeeded, by an early appreciation of the condition, in rescuing all but the severest forms from the utter helplessness formerly so common.

Finally, this very imperfect sketch of Dr. Emminghaus's point of view should not be completed without mentioning that the sharply defined plan of his work prevents him from recognizing that host of mental affections whose germs are often innate, and whose prodromal symptoms often clearly manifest in childhood, but which come to distinct view only later in life, especially at the periods of intense physiological change.

The Relative Proportions of the Steam-Engine. By WILLIAM DENNIS MARKS. Philadelphia, Lippincott. 8°.

THE little book lying before us is a volume containing matter of value and interest to technical schools. It represents the first attempt which, so far as we are aware, has ever been made to determine, by correct methods and in any considerable detail, the proportions of the parts of the steam-engine. It is a singular fact, that notwithstanding the importance of the steam-engine, and its attractiveness to scientific writers on applied mechanics, no treatise of this character has ever before been produced. The general theory of the heat-engines has, especially during the present generation and since the time of Rankine and of Clausius' work, been written and re-written by many writers, great and small, and has been elaborated with all the ingenuity that such authors are capable of; but not one has hitherto had the good judgment, the patience, and the ability, to produce a good book on the proportioning of its rods and cranks, its fly-wheels and its cylinders. Some such work has been done by a few European writers; but none have devoted themselves to the production of a special treatise upon the subject.

Professor Marks has gone into the work with a zeal which could not but be fruitful of result, and has produced a book which will be of very great value to the profession and in the schools. Collating all that could be found in standard writers on the strength of materials and on machine design, he has added much useful material as the result of his own investigations, and has thus put into convenient form and into a single volume a very large amount of fact and calculation indispensable to the student in engineering and to the designer of machinery of this kind. A chapter is devoted to the study of the proportions of the steam-cylinder and the calculation of power; another to the sizes of bolts, areas of ports, and size of piston-rods. The proportions of fastenings, such as gibs and keys; the size and shape of the connecting-rod and its connections; the sizes, forms, and proportions of crank-pins, and the proportioning of the crank in wrought or cast iron and in steel, — form the subjects of succeeding chapters; and the size of the crank-shaft in the several available metals is calculated by carefully established formulas and rules. Among the best parts of the book are the studies of the effect of the fly-wheel, and its action as a regulator. This is probably the most complete and practically valuable discussion of this subject to be found. The last chapter, that on the governor, is the least satisfactory in the book; and it would seem that the writer had not yet worked up to that point in his progress toward his ideal of his book.

[1] It is interesting to note that even in children the modes of suicide in the two sexes are strikingly different. The boys in seventy-five per cent of all cases hang themselves, in fifteen per cent drown themselves, in three per cent poison themselves, and never stab themselves. Of the girls, only ten per cent meet death by hanging, but sixty-four per cent by drowning, thirteen per cent by poison, and eight per cent by stabbing.

Two chapters are given to the study of the 'limitations of the steam-engine,' a phrase of somewhat awkward form rhetorically, but which is familiar to all engineers interested in the subject as relating to the limits set to the efficiency of the machine by the counteracting influences of 'cylinder condensation,' — another awkward phrase, meaning condensation of steam in the steam-cylinder, — and of conduction and radiation or other forms of waste which distinguish the actual from the ideal engine. Here the author takes the hitherto unconquered bull by the horns, and gains the honor of having been the first to produce a rational formula embodying what are supposed to be the laws of this method of transmission of heat, and of loss of engine efficiency due to it. The resulting expression is somewhat complicated; but it is justified by experiment, so far as comparison has been carried by its author, and may be expected to stand until further progress is made in investigation of the actual conditions, — which are unquestionably far from being few or uninvolved, — and extended research shall have thrown more light upon a problem which is to-day the most important in the whole theory of the steam-engine.

Space does not permit the criticism in detail of this or of any other part of the book. It is rich in valuable material, and although, like the angels, not absolutely without fault, in the opinion of well-informed engineers, either in matter or in manner, deserves exceptionally high praise for its wealth of excellences.

The Ancient Cities of the New World. By Désiré Charnay. New York, Harper. 8°.

In the present volume Désiré Charnay gives the results of his long and careful explorations in Central America, which were begun in 1857. Since that time, all his energies have been directed towards the collection and preservation of the antiquities of that country. As the expenses of his expeditions were defrayed in part by the French Government, in part by an American citizen, Mr. P. Lorillard, his collections are deposited in the Trocadero in Paris, and in Washington: they are indispensable for all future studies of the culture of ancient Central America. The book under review is as well pleasant to read — describing, as it does, the travels of the author and the present state of the country — as of scientific value, giving the results of his studies, and showing in numerous splendid illustrations the ancient monuments and other kinds of relics, as well as beautiful views and characteristic groups.

It was the main object of the expedition with which the author was intrusted to collect authentic material for a thorough study of the ancient civilization of Central America: therefore his studies were almost exclusively directed to the collecting of relics, photographing of buildings and reliefs, and making casts of the inscriptions and bas-reliefs. The material he gives in this line cannot be excelled. His researches lead him to the conclusion that the American civilization at the time of the conquest was of comparatively recent origin. It is his opinion that all its branches bear the characteristics of Toltec civilization, and that, by studying the monuments, the migrations and the gradual development of Toltec art may be discovered. A map shows the author's opinion regarding the subject. He lets the prehistoric Toltecs immigrate from the north-west. From the plateau of the City of Mexico two branches emigrated, — the Gulf branch and the Pacific branch. Subdivisions of the former invaded Yucatan. He lets the two principal divisions meet in Copan, the south-eastern terminus of their migrations. "The Toltecs," he says, "migrated south, following the coasts of both oceans. They ceased to exist as a nation after the disruption of their empire; but their scattered remnants carried on the work of civilization in Central America, on the high plateaus, and in Anahuac, evidenced in the strong resemblance that the civilizations of these various regions bear to one another." The time of the erection of the largest buildings and temples he supposes to be about the twelfth century.

We cannot accept those theories of the author referring to the connection between the art of eastern Asia and Central America. A thorough and detailed comparison has never been made, and superficial similarities of monuments and customs cannot be a sufficient proof of a common origin.

Since the present volume was written, the author has accomplished a new journey to his favorite field of explorations, a preliminary report of which is being published in *Le Tour du Monde* and in the *Globus*. The recent enterprise of this devoted explorer has not been less successful than the former ones, some results of which are fortunately made accessible in the volume just published.

Living Lights. By Charles Frederick Holder. New York, Scribner. 12°.

Mr. Holder has thrown into a popular form the substance of what is known about phosphorescent animals, illuminated by occasional coruscations of imagination. Most of his readers will be surprised to learn that the power of emitting light is so widely shared by animals of all classes. Not only do fire-flies fly, glow-worms glow, and zoöphytes twinkle in the sea, but sea-anemones, alcyonarians, gorgonias, star-fishes, earth-worms, crabs, shell-fish, lizards, frogs, toads, fishes, birds, monkeys, and men must be added, according to Mr. Holder, to the number of animals capable of giving forth light. In the author's preface, he says, "In the United States there are ten thousand enrolled young naturalists, comprising the Agassiz Association. As one of a committee solicited to answer questions propounded by the young people, . . . I have often been surprised at the nature of the queries, which shows that this army of young observers includes many who are not merely collectors of curiosities, but are naturalists in the best sense. They are systematic inquirers, and working in the right direction to become scientists, should they continue. It is to these young scientists . . . that this volume is addressed." While we welcome any book that will serve to awaken in the young an earnest desire to study nature, and while this fascinating volume will certainly awaken interest, it is all the more to be regretted that the author is so fond of pyrotechnical natural history. He loves to hear the sigh of pleasurable surprise that rises from his audience as he sets off a pyrosomatic rocket, or kindles pavonian flame. This fault appears especially in the illustrations, which, for young people, should be accurate, since from them they derive their lasting impressions. Not to rely on our own judgment, we quote the author's own words, "It is evident that illustrations of the phosphorescence of marine animals must be more or less conjectural;" and again (the Italics are ours), "In Plate XXVII. [XXVI.?] an *ideal* view is given of the *possible* appearance of the light of a large heron." There is no excuse for 'conjectural illustrations' and 'ideal views of possible appearances' in a book of this nature. They are distinctly misleading and wrong, and have the obvious and inevitable effect of throwing discredit on some of the more highly-colored portions of the text, into which the phosphorescence of herons, lizards, monkeys, and men seems to have been admitted on very slender evidence. Those portions of the book which record the results of Mr. Holder's own observations are the most interesting, and perhaps the least illumined by fancy.

The Ventilation and Warming of School-Buildings. By Gilbert B. Morrison. New York, Appleton. 8°.

It seems a long leap from Rosenkranz's 'Philosophy of Education,' which opened the International Education Series, to this successor, which discusses practical schoolhouse-building. But Dr. Harris shows how catholic his conception of education is by including the two books in the same series.

Mr. Morrison truly says that no "subject has been more carefully and intelligently studied than the direct and ultimate effects of impure air on the human system, and on no subject is there more unanimity of competent opinion" (p. 18); but nevertheless the want of sufficient and definite information regarding the ventilation of schoolhouses is general. The lack of general information on this particular point is the more blameworthy, inasmuch as the effects of breathing impure air are not only pathological, but pedagogical and economic. The author instances this (p. 22).

A short chapter deals succinctly with the physical aspects of the air, and then the various tests for its examination are briefly described. The general theory of ventilation is illustrated by a simple experiment (p. 47); and then the natural and artificial methods of ventilation are discussed with more attention to detail. The remaining chapters discuss the general problems of ventilating and heating, and include descriptions of many of the expedients that are used for these purposes. The treatment of each question is abreast

of the times, and eminently satisfactory; and, if the book is referred to half as frequently as it should be, our schoolhouses will be healthier and better adapted to serve the purpose for which they are erected.

Azimuth. A Treatise on this Subject. By JOSEPH EDGAR CRAIG. New York, Wiley. 4°.

THE determination of azimuth comes up as an important practical problem on board ship, in ascertaining the variation or deviation of the compass, or on land in fixing a true meridian line, and it is desirable that the necessary astronomical observations should be made under conditions which give, at least theoretically, the most accurate results attainable. Lieutenant-Commander Craig's book is a mathematical study of the spherical triangle with respect to the azimuth problem, supplementing the text-books, and he calls attention to certain statements in the latter on some points referring to the most favorable conditions of observation, which he regards as misleading.

After devoting several pages to the elementary formulæ for the solution of a spherical triangle, and the differential variations of its parts, he considers the conditions of maximum and minimum errors, and the most favorable and least favorable position of a heavenly body for observation in a given latitude. Two-thirds of the text are then taken up with an analysis of the equations to the loci of maximum and minimum errors, and the book concludes with some thirty plates illustrating these loci.

The Ethical Import of Darwinism. By JACOB GOULD SCHURMAN. New York.

THE excitement following the appearance of Darwin's works rendered a fair criticism of their merit and import impossible. The younger generation, who had been trained to some extent to think by the methods of which Darwin forms a model, were ready for the announcement, and were at once transformed into a body of enthusiastic followers. The older thinkers, and especially such as were by their profession devoted to upholding a theory of the universe established by tradition, and in entire opposition to the discoveries of science, met the new theory with violent protestations of inconsistency with established beliefs, and denounced it as fraught with danger to morality and the religious sentiment. It is only within a few years that the smoke has been lifted off the battle-field, and made it possible to calmly contemplate the justness and the outcome of the battle. As has frequently happened before, it is found that the party who asked, not "Is it true?" but "What does it lead to?" has been the loser. The general point of view of which Darwinism is an expression, the ingenious and valuable explanations which that master-hand collected, the healthy ferment penetrating through all departments of knowledge that his writing brought about, — all these have become the inalienable inheritance of mankind. On the other hand, the majority of evolutionists will admit that their doctrines have been regarded as solving certain vexed problems of mankind which really remain as unsolved as ever; and the province and exclusiveness of the mechanism of development which Darwin discovered have been likewise exaggerated. Recent writers, such as Romanes, are acknowledging the former and supplementing the latter. The one has been termed a 'pseudo-Darwinism,' and in addition to natural selection we speak of 'physiological selection,' and so on.

Professor Schurman's book gives every mark of having been written in the latter half of this decade. There is no attempt to dwarf or warp (much less ridicule) the evolutionary position: on the contrary, its strictly scientific character is appreciated, and its main tenets admirably sketched. Contrary to the usual method in such discussions, the author has taken the trouble to find out what Darwinism is. Nor do these negative virtues complete the list of the merits of the book. The author practically illustrates, by a vigorous and intelligible style, his opinion that "there is no theory, or criticism, or system (not even Kant's or Hegel's), that cannot be clearly expressed in a language which in Locke's hands was strong and homely, in Berkeley's rich and subtle, in Hume's easy, graceful, and finished, and in all three alike plain, transparent, and unmistakable." Moreover, each chapter is devoted to the expression of a real point without irrelevant matter or needless repetition. The several chapters form a logical train of argument, and the book is thus worthy of the attention of the scientist. The unfortunate fact that so many works in this field are strikingly deficient in all these qualities makes it necessary to signalize the exceptional character of this work.

Professor Schurman holds that 'evolution' is a strictly scientific hypothesis warranted by facts, and is to be accepted, whether for the sake of argument or as a real belief, by all who seek to determine its ethical import. He denies that the system of utilitarian hedonism which Darwin and Darwinists have attached to the theory is at all a legitimate inference from that theory, and regards it as accidental, and due to the fact that these men were raised in this school of ethics. Darwinism is to him consistent with any theory of ethics, and does not favor one above another. As long as evolution simply explains the method of development, and not the fact that there is something to develop, a further philosophic theory is made necessary. In the second place, the author holds that the attempt of Darwin himself, as of his followers, to account for the existence of a moral sense, is deficient, and does not make unnecessary the assumption of an omnipotent and authoritative 'ought.'

To the reviewer's mind, this argument is open to the following criticism. In the first place, the 'ethical import of Darwinism' that we to-day are interested in is not that here discussed, but consists in very practical and momentous questions: 'How does heredity affect responsibility?' 'What does evolution show to be the best method of treating criminals?' It is in this field of practical ethics, formerly neglected or dogmatically passed upon, that the spirit of evolutionary research has and will radically modify our views and practices. Second, the author fails to recognize that the kind of chance with which evolution deals is synonymous with 'something that needs no explanation.' If I hazard the guess that a die I am about to throw will fall on 'six,' and it really does so, I say it is 'chance,' and thereby mean that it needs no further explanation. The fact that this 'chance' may have momentous consequences does not change its character. That there is a strong temptation to be dissatisfied with this casual answer will be readily admitted, and it is this temptation to which the author has yielded in a portion of his criticism. Finally, the fact that the followers of Darwin tend to take a view of life easily distinguishable from that of those who oppose him, is itself significant of the ethical import of Darwinism. It may be true that it is *a priori* as possible to be a Darwinist and at the same time an adherent of any one of a half-dozen schools of ethics; but, as a matter of fact, ethics takes its character quite as much from the relative order and dignity of the several virtues leading to the *summum bonum* as from the view of the *summum bonum* itself.

It would be unjust to close this notice without calling attention to the plea for a science of historical ethics, and the contribution to it, by way of criticism, of current theories of 'family development,' to which the last chapter is devoted.

NOTES AND NEWS.

A VOLUME of great interest to the meteorologists of the country has recently been issued by the National Academy of Sciences, containing the first chapter of a revision, by Prof. Elias Loomis, of his numerous 'Contributions to Meteorology,' or studies based on the daily weather-maps of the Signal Service during the last thirteen years. These contributions in their original form, as presented to the National Academy and published semi-annually in the *American Journal of Science*, considered one topic after another in sequence, determined by convenience rather than by system, and therefore were greatly in need of orderly revision for use by the many students who must make frequent reference to them. Translations and abstracts of the originals have appeared in France, England, and Italy; and a serviceable review and discussion of the results gained have recently been prepared by Mr. H. H. Clayton for the *American Meteorological Journal;* but a revision by the author of the papers himself has naturally an interest and a value of its own. Professor Loomis has performed a threefold service in this work, — first, in utilizing the weather-maps to an extent not approached by any one else in the country; again, in now systematizing the results gained; and, most of all, in developing his method of simple, inductive in-

vestigation, that will long stand as a model for meteorologists to follow. It is to be hoped that the later chapters of the work may appear in due time.

— Lieutenant Dunwoody of the Signal Service, who for a number of years has taken an active interest in developing the State weather-services, has recently accomplished a good piece of work in securing the adoption of a uniform system of summarizing and tabulating the data published monthly in the various State bulletins. Hitherto every State has had pretty much its own plan, and the change to a single form of statement cannot fail to be advantageous to all concerned. The reports of fifteen State weather-services are abstracted in the last monthly weather-review of the Signal Service.

— The second annual meeting of the New England Association of Colleges and Preparatory Schools will be held at the College of Liberal Arts, Boston University, Oct. 28 and 29. The programme of the meeting will be as follows: 'The Place of the Fitting-School in American Education,' paper by Prof. George T. Ladd of Yale University, discussion to be opened by Dr. Walter Q. Scott, principal of the Phillips Academy, Exeter, N.H.; 'Aims and Methods in Modern-Language Teaching,' paper by Mr. Samuel Thurber, master in Girls' High School, Boston, discussion to be opened by Prof. Richard A. Rice of Williams College; the following question may also be taken up for discussion: 'How can the Interests of Higher Education secure a more Appreciative and Hearty Support?'

— Dr. Simpson, health-officer at Calcutta, reports two simultaneous outbreaks of cholera, — one on land, and the other on the ship 'Ardenclutha,'—both being due to the same cause. The land epidemic was cause by drinking-water into which the dejections of a cholera patient had found their way. In the epidemic on board the ship it was demonstrated that milk had been drunk by those who afterwards suffered from the disease, and that to this milk cholera-infected water had been added.

— Mr. G. Taylor, in the *China Review*, March and April, 1887, gives the following amusing Chinese stories: A young tiger met an old one and said, "I got hold of a man to-day whose upper parts were so tasteless and his nether parts so sour, that, hungry as I was, I left him in disgust. I wonder what sort of a man this could be." — "A student who has had to buy his degree," was the reply. The Lord of Hades considered a certain spirit to have been a great sinner indeed, so he adjudged that he should re-enter the world to become a poor scholar with five children. "Is not that a rather light punishment?" remonstrated an angel. "No," said his Eminence, "the five hungry children will soon drive him mad." Chang and Chung mutually agreed to start a brewery. Said Chang to Chung, "You supply the rice, and I will furnish the water." — "But," queried Chung, "if the profits are divided according to the capital embarked, I am afraid it will be difficult to apportion your share." — "Oh, I'm not afraid," said Chang: "when the brew is over, give me the water; you can have the remainder." A man was seized by a tiger. The victim's son took his bow and pursued. "Hit him in the leg," cried the father, "else you'll spoil the market-value of the skin." A bibulous individual, on entering a restaurant, noticed that the wine-cups were small. After seating himself, he gave vent to a most demoniacal series of howls and groans. "What is the matter?" asked the startled landlord. "Ah!" answered the man, "my father, a hale, hearty man, met his death at a friend's table by accidentally swallowing a small wine-cup, so, whenever I see similar ones, the memory of the sad event overcomes me." It is needless to add that the cup was replaced by a larger one. A hard drinker dreamed that he had become possessed of a bottle of genuine stuff, but, determined to enjoy it thoroughly, he had begun to heat it. During the heating process he awoke. "Hoo, hoo!" he groaned, "if I had known this was to happen, I would have drunk it cold." A servant did not fill a guest's cup to the brim. The latter, holding it up, remarked, "This cup is too deep," and broke a piece off. "How is that?" cried the host. "If the upper part can't hold liquor, of what use is it?" was the smart retort.

— Dr. Daniel G. Brinton, professor of American archæology and linguistics in the University of Pennsylvania, will read twice a week with students who desire to pursue these branches. The course on archæology will be associated with the examination of specimens and visits to typical collections. The readings in American linguistics will begin with the structure of American languages in general, and proceed to the special consideration of the Nahuatl and Algonkian groups.

— The *British Medical Journal* reports a case of leprosy which is believed to have been contracted through vaccination. A physician living in the tropics vaccinated his own son with virus obtained from a native child in whose family leprosy existed. At the time the virus was taken, the child gave no evidence of being affected with the disease, although subsequently it manifested itself in him. A third child was vaccinated by the physician with virus taken from his own son. Subsequently the son developed leprosy in a mild form; but the child who was vaccinated with virus taken from him had the disease in a most severe form, and died from it. The physician's son is now attending school in England, eminent physicians having given the opinion that there is no danger that the other students will contract the disease.

— A correspondent of *Indian Engineering* points out that the fibre industry of Burma is well worthy of attention and development, at a time when energy and capital are being expended in increasing the resources and industries of that province. The country abounds in fibre-producing plants, and the different species of bamboo, China-grass, and pineapple, grow wild everywhere. Some years since, an American missionary at Toungoo prepared a quantity of paper stock and fibre from these plants, and sent it to the United States, where it was manufactured into a superior kind of cloth, much resembling silk, and also into paper of different qualities. Subsequently the same gentleman modelled a loom from the bamboo, which he instructed the Karens how to use, and coarse cloth is now woven by them for their own use. Bamboo is pre-eminently the best substitute, if properly prepared, for esparto grass, rags, and other materials used in the production of paper, and it has been so stated by one of the leading authorities in England on commercial fibres. In Burma the bamboo grows in profuse luxuriance and variety. It ranges from the thickness of the ordinary rattan to two feet in circumference. The stems of the latter, the *Bambusa gigantea*, are used by the natives for water-pails. The bamboo needs preparation to fit it for commerce, like hemp, jute, and other articles, and this preparation, the writer argues, should take place in Burma. Favorable sites for erecting factories for this treatment are to be found on the banks of the Irrawaddy and Salween, where communication is easy both with the interior and the principal seaports. The fibres of bamboo, China-grass, and pineapple, can be treated in the same manner as jute, and spun so fine that an expert could barely distinguish the product from real silk. These fibres possess an advantage over jute, in that they require little chlorine when bleaching, and they remain stronger in consequence. At present large quantities of cloth woven from China-grass and bamboo are brought into the Rangoon markets by Chinese from Bhamo, and, although the material is not manufactured with modern looms, the quality appears so fine as to resemble tussore silk. The cultivation of jute as an experiment undertaken by the government was very successful. With a view to encourage the industry, the authorities offer to purchase good jute from Karen cultivators, and also offer a bonus for the largest production.

— By a decree dated July 20, M. Bihourd, resident-general in Annam and Tonquin, has laid down the regulations by which opium can be sold, wholesale or retail, or transported in the country. The exclusive right to open opium-shops in a district is given to a farmer or contractor, and is to extend over a definite area corresponding with one or more of the administrative divisions. A fee must be paid for each shop, of 100 francs in the three chief towns, 50 francs in the capitals of districts, and 20 francs elsewhere. Trading wholesale in the drug is only permitted in places where customs stations exist. Wholesale merchants must pay an annual tax of 600 francs for each place at which business is carried on, and they can sell only to the licensed farmers: they must keep a register open to official inspection, recording each sale, the name of the purchaser, and the place to which the opium was sent. Each

package containing more than a certain amount must be accompanied by a customs permit or certificate from the local farmer, and heavy penalties are appointed for breach of these regulations or infringement of the privileges of the farmers. The effect of the decree is to establish a monopoly in the trade in opium in the government, which will work through the licensed farmers. But no provision is made for the sale by public auction of the right to deal in opium, as is usual in British and other colonies where opium is farmed.

— We learn from *The Critic* that a periodical of a somewhat new character is to appear in The Hague (Netherlands). It will be a fortnightly in four languages, — English, French, Spanish, and Italian, — containing original correspondence on letters, arts, and science from London, Paris, Madrid, and Naples. A New York correspondent has been invited to contribute an American letter to the quartet already named. The object is to promote the study of languages. The editor of the new periodical is to be M. Taco H. deBeer, editor of *de Portefeuille*, the *Dutch Art Chronicle*, and *Literary Review*.

— A new process of electroplating natural objects, such as animals, flowers, and tissues, has been brought out in France, and, as described in *Engineering*, is as follows: An albuminous liquid is obtained by washing some slugs or snails in water to clean them, then placing them in distilled water until they give off their albuminous matter. This is filtered and boiled for an hour, then distilled water is added to make up for that lost by boiling, and also about 3 per cent of nitrate of silver. This solution is then kept in bottles hermetically sealed, and in a dark place. When required for use, about 30 grams of the liquid are mixed with about 100 grams of distilled water, and into this solution the objects to be electroplated are immersed for a few moments. They are then put into a bath consisting of about 20 per cent of nitrate of silver dissolved in distilled water, and afterwards submitted to the action of sulphuretted-hydrogen gas, which reduces the nitrate of silver on the albumen-coated object. Thus treated, an organic object becomes fitted to receive the electro-deposited metal intended for it; and the layer is said to be of superior fineness to that produced by the other known processes for coating natural objects with metal by galvanoplasty. It shows the texture of the object with much delicacy.

— Improvements have been made at the glacial pot-hole on Colonel Hackley's land in Archbald Borough, Lackawanna Co., Penn. Mr. Hackley has generously appropriated the sum of five hundred dollars for the purpose of protecting it against the action of the weather, and also to make it more attractive to visitors. All the underbrush has been cleared and the ground graded, leaving the shade-trees standing, forming a little park. At present the pot-hole is divided in two by a wooden brattice for the purpose of mine-ventilation. All this timber-work will be taken out, so that the entire pot-hole can be seen.

— Reports of two journeys through Yemen have recently been published, — one of a German scientist, E. Glaser, who visited the country for the purpose of collecting Sabian inscriptions and manuscripts, in which he was eminently successful; one by the English major-general, F. T. Haig. The latter made only a flying trip through the country, starting from Hodeida on the western coast, to Sanaa, the capital, a distance of 140 miles, and from Sanaa turning due south to Aden, 260 miles. Including a week spent in Sanaa, the journey occupied, in all, thirty-one days. The object of the journey was to ascertain whether it might be possible to do any thing for the Christianization of the inhabitants. Glaser, on the other hand, staid in southern Arabia from October, 1882, to March, 1884, and from May, 1885, to February, 1886; and at the present time he is again at work in his old field. It is somewhat amusing to compare the statements of both travellers. Haig describes the severity of the Turkish taxation, and their cruelty against the natives. Glaser, on the other hand, praises the safety of the territories occupied by the Turks, and states that the English have no control whatever over the tribes inhabiting the colony of Aden, who receive an annuity amounting in the aggregate to twelve thousand dollars a year. During the last fifteen years the Turks have succeeded in establishing their authority in several parts of Arabia, but it is only in Sanaa that the influence extends into the interior. According to Haig's description, they cannot feel very safe here: "The town has an Arab population intensely hating the few thousand Turks by whom it is held down, heavily taxed, and generally obliged to furnish gratis the supplies required for the large garrison of Turkish soldiers. The latter are not allowed to go into the narrow streets for fear of assassination. There is a citadel at one part of the walls, with its guns turned significantly, not to the outside, but upon the town. Glaser staid most of his time in Sanaa, and made numerous excursions in the neighborhood. He made astronomical observations and surveys in addition to his important archæological collections. The following notes are taken from his description in the Proceedings of the Geographical Society of Vienna. The west side of Arabia is occupied by a mountain-range from eight thousand to ten thousand feet in height. The western declivity of this range is very steep, falling abruptly to the Tihâma, a plain about two thousand feet in height, with a gradual slope towards the sea. The eastern slope of the mountain-range is very gradual. The south coast of Arabia is also occupied by high mountains. While the high land between these ranges is a desert, the slopes are drained by numerous rivers, some of which are running throughout the year. The slopes of the mountains are highly cultivated, terraces being built from the summit of the range to its foot. Those which can be easily irrigated yield four crops annually, and are highly prized. Coffee is one of the principal products of this country. While Haig describes the climate of the high parts as wholesome and agreeable, it is quite the reverse according to Glaser. He says that malarial fevers prevail in the high land as well as in the low land. In Sanaa the temperature frequently falls below the freezing-point, and during the hottest season a temperature of 92° F. was observed. In winter the daily variations are very great, a temperature of 32° in the morning being followed by one of 68° after noon. The western slopes of the mountains are moistened by heavy fogs which every day ascend from the low land to the summit, though they do not extend into the interior of the country.

LETTERS TO THE EDITOR.

*** The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The Scientific Swindler Again.

A MAN answering the description of the impostor given in previous numbers of *Science*, appeared at the rooms of the Boston Society of Natural History on Saturday last, having in his possession a microscope, which he offered for sale at a very low price. We suspected his character, but, having no charge against him, were unable to do any thing, and were in hopes he would return on Monday with his microscope, as he engaged to do. He did not return, and we could therefore do nothing. ALPHEUS HYATT.

Boston, Oct. 18.

Savagery in Boyhood.

EVERY thing, we suppose, must be considered hereditary in the present age; even the tendency to wear cocked hats, or to throw cabbage-heads on hallow eve. At any rate, the *Popular Science Monthly* for October brings this doctrine to bear upon the phenomena of savagery in boyhood, as noticed in *Science* of Oct. 7. The author explains that cruelty in children is the transmitted habit of ancestral savages, and observes that "the emotion of pity appeared late in the history of the race." In the same connection we may mention the intense interest which children take in narratives of warfare: torturing animals is a less general incident. But the callousness of children in contemplating the horrors of war and its consequences has always been an interesting fact to us. However, is no other analysis of this possible than the supposition that our savage forefathers were cruel? May we not be in danger of making

too much of heredity here? No doubt its importance cannot be exaggerated. But if, as the author admits, "the early appearance of the sympathies depends upon an early development of mental functions which are properly dormant until later in life," may not the cruelty of children be an incident of ignorance, and not due to the entire absence of pity? As admitted, pity is a state of mind which belongs to the reflective stage of consciousness, when we are able to compare ourselves with others, and, in however indistinct a form, to apply the method of doing as we would be done by. It is quite possible that children know nothing about the pain they inflict by cruelty and torture. They may be governed in their conduct by much the same curiosity that prevails to permit vivisection, and most probably never inflict pain for the sake of creating suffering. Blind Tom, when a boy, used to pinch and torment his brothers and sisters until they cried, and all for the sake of the pleasure he himself received from a new and peculiar kind of sound, his mind being interested in all sounds alike, and passing no intellectual or moral judgments upon their occurrence. It is no doubt much the same with most children until their experience enables them to realize a 'solidarity' of interests between themselves and others. Then they will begin to show sympathy and to shrink from producing pain, not because it is hereditary, but because social environment exerts such a pressure in favor of learning the consequences and moral significance of our actions. At the same time heredity cannot be ignored. But the phenomena of cruelty and pity are much more complex than heredity, while including it. Besides, it may be misleading to say that "the emotion of pity appeared late in the history of the race;" for it may not have been so much the sympathies that appeared late as the extent of their application. So of the individual. Pity may be instinctive, but the complicated range of circumstances which require its exercise may demand more knowledge and experience than are possible to childhood. Indeed, children may very early begin to cry from sympathy at the spectacle of suffering in others, when conscious of it, but are indifferent to its infliction upon animals, most probably because they do not realize any thing about it. Pity will show itself, then, in proportion to the extension of their knowledge of what is reciprocal to their own interests or sense of pain. Hence may we not say of sympathy, both in the race and in the individual, what T. H. Green said of humanity in comparing Greek and modern civilization; namely, that the standard of conduct in this respect was the same to the Greek as to us, but that more persons are to-day included in the right to be judged by it? That is, "the conviction of the brotherhood of all men does not bring a new conception of what is due towards those who have claims upon us, but a new view of the range of persons who have such claims." Certainly it seems a little violent to suppose the absence of sympathy altogether because the extensive conditions under which it is exercised at present were wanting in the earlier history of the race or of the individual.

J. H. H.

The Purslane-Worm (Copidryas Gloveri Grote).

DURING the past season the entire State of Kansas has suffered an invasion of caterpillars of a species not previously known to exist except upon the plains of Colorado, New Mexico, Arizona, and western Texas. This insect has occurred in such numbers as to suggest to many of our citizens the idea of spontaneous generation, and the writer has received many inquiries indicating alarm lest it should prove to be a new edition of the real 'army-worm,' and become a great crop-destroyer in the year 1888. Such fears, however, are entirely groundless. I have not been able to make the caterpillars eat any thing but purslane; and the insect may be regarded as a friend rather than a foe, since its chief mission in life appears to be the destruction of one of our most troublesome weeds.

The eastward progress of this species reminds one of the similar advance of the Colorado potato-beetle. My first acquaintance with it was made in August, 1884, at Deming, New Mex., nearly twelve hundred miles from Lawrence, where I captured some twenty of the moths during my summer collecting-expedition. They were attracted by the lamps at the station-hotel of the Atchison, Topeka, and Santa Fé Railroad Company. They proved to be a rare species in collections, and were in great demand among my entomological correspondents. My next acquaintance with this insect was from two specimens of the moth captured at the electric lights in Emporia, Kan., by my student-friend and assistant, Mr. V. L. Kellogg. Professor Popenoe of Manhattan observed the caterpillars and bred the moth in 1886. Emporia and Manhattan are each about a hundred miles west from Lawrence, and the first observed appearance of the species at the latter place was in 1887. It remains to be seen whether the purslane-destroyer will become acclimated in a moister and colder climate than that of its original habitat. If it succeeds in adapting itself to its new environment, it may push on to the Atlantic seaboard, and delight the farmers and gardeners of the whole country by assisting to exterminate the hated 'pursley.' If not, it will disappear from view, as did a certain New Mexico butterfly (*Colias Mexicana*), which appeared suddenly in Kansas in large numbers in November, 1875, and has not since been observed in the State, having been unable to survive the first winter. Inasmuch as this latter immigrant has already survived one Kansas winter in safety, it is probable that it will become a permanent resident.

I would offer the following explanation of the fact that this insect, indigenous to the Far-Western plains, should so long have delayed its invasion of Kansas and its possible 'march to the sea.' Its native food-plant being a Western species of purslane (*Portulaca retusa* Engelmann), it did not extend beyond its original habitat until the building of the Atchison, Topeka, and Santa Fé Railroad had resulted in the western extension of our common Eastern purslane (*P. oleracea* L.). As soon as the Eastern purslane reached the home of the Far-Western species, forming a sufficiently continuous connection, the purslane caterpillar, finding the two plants equally palatable, began its eastward march. In precisely the same way the Colorado potato-beetle, having for its original food-plant a wild Western species of *Solanum* (*S. rostratum*), began its journey to the Atlantic just as soon as the cultivated potato (*Solanum tuberosum*) was extended westward to meet the wild *Solanum*, commonly called the Texas thistle and Santa Fé burr.

To the entomologist it will be interesting to know that the scientific name of the purslane moth is *Copidryas Gloveri*. It was described by A. R. Grote in 1868 as belonging to the genus *Euscirrhopterus*, but at a later date it was placed by him in the new genus *Copidryas*. Mr. Herman Strecker has referred it to the genus *Eudryas*, but the peculiarities of the caterpillar, hitherto unknown, confirm the propriety of separating it from that genus. It belongs to the family *Zygænidæ*, and is a near relative of the 'beautiful wood-nymph' (*Eudryas grata*) and the 'eight-spotted forester' (*Alypia octomaculata*). As both the latter species feed upon the foliage of the grape-vine, it would not surprise me to find the purslane-worm occasionally making use of the same food-plant. I do not, however, apprehend any serious danger of making such a discovery.

F. H. SNOW.

University of Kansas,
Lawrence, Kan., Oct. 10.

Queries.

15. IS THE TRUMPET-CREEPER POISONOUS? — I should be very glad to hear of any positive evidence in regard to the alleged poisonous property of the trumpet-creeper (*Tecoma radicans*). This beautiful vine is very abundant in this neighborhood, and there seems to be a pretty general belief that it is poisonous to the touch, the effect being like that of the poisonous *Rhus*. I have not, however, been able to get hold of any well-authenticated cases of poisoning from this plant. A child of my acquaintance was said to have been poisoned from handling it, but it is not at all certain that the eruption was not a return of a slight cutaneous affection from which the child had suffered shortly before. Such cases as this prove nothing, nor, on the other hand, does the fact that I, and others, have handled the plant with impunity. Our immunity may have been due to our individual constitutions. Every one knows, of course, that there are plenty of people who are not at all susceptible to *Rhus*-poisoning, and yet no one would hesitate to call either species of *Rhus* a very poisonous plant. As far as I can learn, the poisonous property of the trumpet-creeper is not generally recognized by botanists. I shall be very glad to hear what the experience of other people has been with this plant.

JOHN MURDOCH.

Smithsonian Institution, Oct. 12.